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SPECIAL ISSUE OF THE SINGAPORE ECONOMIC REVIEW — ECONOMICS OF CRISES AND DISASTERS

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1. Introduction

The economics of crises and disasters is a topic which in recent years has come under scrutiny due to the frequent occurrence of crises and disaster events. Recent examples of crisis and disaster events include the 2003 SARS epidemic, the 2004 Indian Ocean tsunami, the 2007–2008 Global Financial Crisis (GFC), the Asian floods, the 2010 Haiti Earthquake, the 2011 East Japan earthquake and tsunami, the 2012 Philippines typhoon and the Pakistan floods (CRED 2012). 2013 saw major natural disasters such as Typhoon Haiyan in the Philippines, Typhoon Phailin in India, Hurricanes Manuel and Ingrid in Mexico and tornadoes in the United States (IFRC, 2013). 2014 was hit by cyclones in Australian region, the Pacific, and the North Indian ocean, and tornadoes in the United States (IFRC, 2014). In 2015, a 7.8 magnitude earthquake, which was followed by major aftershocks, struck Nepal causing thousands of deaths, injuries and massive damages in Nepal and neighboring regions of India and China. The devastating consequences of these events, and their subsequent impacts, affect multiple sectors, including peoples' lives and livelihoods, which has underscored the need to address crisis and disasters in their entirety (Sharma, 2010). The urgency of this matter is heightened by the increasing trend in the global number of disaster events for all disaster types, though fatalities have decreased for all disasters except for technological disasters (Guha-Sapir *et al.*, 2015).

In this special issue, we include studies on economics of crises and disasters including micro- and macro-level studies discussing the relationship between the economy and economic, social and natural disasters. The next section discusses economic policy issues that arise following a major crisis or disaster using the example of The Great East Japan Earthquake and Tsunami. The subsequent section briefly discusses issues related to governance of disaster risks in view of the role of institutions in managing crisis events and risk reduction measures. The last section briefly summarizes the papers included in the special issue.

2. Lessons Learned from "The Great East Japan Earthquake and Tsunami"

The Great East Japan Earthquake and Tsunami caused severe damages especially at the coastal area. Almost all the buildings were destroyed by the disaster, and the people were totally shocked by seeing the devastation through the tragic pictures and videos shown by the media. On the other hand, there were also the areas that were much less affected, and the impact by the disaster was not as severe as other badly affected areas. It has proved that the current standard of infrastructure and architecture in Japan is fairly strong.

Normally, the media shows especially the damages which are very striking and severe, and as a result, the information created the misunderstanding among the public concerning the situation of the affected areas. For example, the tsunami left a large quantity of debris, and soon a problem on where to dispose the debris arose. The initial information and message was that the quantity was too much to dispose only in the Tohoku region and the support from other areas was needed (see Taniakwa *et al.*, 2014). Therefore, the government requested other prefectures and cities to help its disposal providing the subsidiary to those who accept the debris. A number of cities raised their hands to respond to the request. One month after the disaster, Taniakwa *et al.* (2014) found out that the quantity of debris was less than estimated by the government. It often happens that the actual situation is different from the one that has been already reported by media and governments. It is crucial to provide the right information to the right person, otherwise, it may lead to development of a wrong plan and strategy.

With regard to the nuclear power, a number of organizations and associations have been involved in the nuclear power issue, and the information provided by them are often confusing and missing the main points. What we have learned from the experiences of the nuclear disaster in Fukushima is that it is crucial to have a variety of energy sources. The public sentiment on the nuclear power is very complex. When the climate change problem started attracting people's attentions, the government promoted the nuclear power energy. However, after the accident in Fukushima, the public' interest was moving from the climate change to a renewable energy (Morita and Managi, 2013). On the other hand, people hardly accept 20% rise of energy cost expected if all the nuclear power plants were stopped. In other Asian countries, the debates and discussions on the nuclear power have been very active, and their attentions to the future action and decision by the Japanese government are extremely high.

In order to accelerate the economic recovery in the local affected area, it is crucial to avoid the outflow of the population. From the survey result of Horie and Managi (2014), it was found out that if (1) people can expect high income, (2) others will remain in the area and (3) people working in fishery/agriculture, they are willing to continue staying the same area. The fishery is one of the most important (and damaged) industries in Tohoku. After the disaster, it is commonly said there is no recovery and reestablishment of Tohoku without the reestablishment of fishery. Even before the tsunami, the production of fishery itself has decreased in the last 20 years due to over fishing changing from largest fishery market as producer to eighth largest now (Yagi and Managi, 2011), and the income of fishermen is much lower than 20 years ago. Currently, this industry heavily depends on

subsidiary from the government. It has heavily damaged by Fukushima's nuclear power plant accident and the prospect is very severe due to cesium and radiation problem, which might be a problem for a decade.

It is suggested to allocate more reconstruction budget for the reconstruction of fabrication facilities, not to reconstruct the ports as it used to be. If the subsidiary can be used more effectively, it will provide the job opportunities even in other industries which can generate the income.

It is important for us to learn from the history and experiences as many lessons learnt from disasters exist (e.g., Iwata *et al.*, 2014), to transmit and share the information to the public in easy-to-understand ways for the future.

3. Governance of Crises and Disasters

The full impacts and consequences of crises and disasters are hard to comprehend due to several inherent issues and challenges, ranging from data and methodological issues to interactions across factors responsible for contributing to those events, and also, complexities arising from evolving nature of impacts as seen during more recent events. The major impediments to analyzing crisis and disaster impacts include complex nature of impacts, which can extend beyond time/space, and also, local/national boundary; behavioral issues due to unpredictability and/or counteractions following a disaster event; and inadequate institutional and financial capacity and sound governance system to undertake disaster risk reduction (DRR) measures. Another aspect of crisis and disaster impacts that usually is given less importance is the longer-term effects, which can be even more difficult to estimate due to interactions with various factors including physical/human capital accumulation, natural resources and technology following a disaster event (Sharma, 2010).

In view of those complexities in understanding crises and disasters, how do policymakers pursue their development agenda and address the challenges and risks associated with a DRR based approach? How well the national governments' policies and planning agenda are integrated with overall development approach in terms of building and strengthening risk governance of crises and disasters? Questions and concerns are many and increasingly growing complex over time in this world of increasing interdependency. While we do not specifically address these concerns and attempt to seek solutions in this volume, we do, however, intend to raise some of the issues based on existing knowledge and ongoing work in the area of crises and disasters.

There seems to be a general consensus on an imminent need for mainstreaming risk governance into the national development agenda — both to address existing risks and prepare for future risks — however, the progress made so far appears far less than adequate (UNISDR 2013). In view of more recent disaster incidents, which have underscored the need for urgency to address these complex issues, policy makers and development partners have increasingly felt that recovery — economic and otherwise — can be achieved and sustained only through a concerted and integrated approach (The Brookings Institution 2013). In the past growth-oriented development approaches largely overlooked the need for articulating DRR in the national policy agenda. Since the 90s, some progress has been made in

incorporating DRR into development approach but the general perception is that a sustained integrated DRR approach has failed to receive adequate attention, motivation and commitment at all levels (Birch and Wachter, 2006; Wisner *et al.*, 2011; UN-ESCAP, 2012).

Arguments in favor of incorporating DRR concerns into development planning processes and sectoral policy agenda require that the national governments provide necessary enabling environments including legal framework, resource allocation, collaboration among stakeholders and a system aimed at institutional capacity building. National governments largely agree that efforts are needed to internalize in building a platform for collaboration between all stakeholders in DRR practices relying on such core strategies as a comprehensive approach combined with pragmatic policies with a built-in sound system of implementation, monitoring and evaluation (Joon, 2012).

In recent times there has been an increasing trend of awareness and commitments towards DRR focused development approach as articulated by governments, development partners — national, international — academicians and policy experts. Within Asia, countries have made significant progress in this regard, for instance, in Indonesia, the present DRR approach to disaster management can be considered largely holistic. The Indonesian system not only recognizes the need for active multi-stakeholder collaboration and public participation but also provides an operational avenue through the establishment of a National Platform for DRR (Djalante and Thomalla, 2012). Similarly, in the Philippines, the DRR and Management Act of 2010 has made good progress through building adaptive capacities and increasing resilience, while countries like Bangladesh, India and others have also shown visible signs of progress (UN-ESCAP, 2012; OCD, 2013; Ani *et al.*, 2015).

As such, in recent years, most countries have indicated DRR focused planning and strategies in official documents, thus generating lot of momentum in the area of DRR and sustainable development through building resilience of vulnerable groups, however, translating those commitments effectively into practice has proven to be much more challenging as underscored by government actions/inactions during recent events. The significance of institutional support systems including regulations and procedures for an effective DRR approach (Wisner *et al.*, 2011; and others) is accepted by all however, the progress in this direction is rather disappointing in most of the developing countries. National level evidences have shown that despite an increasing level of commitments towards mainstreaming DRR into development agenda it is rather difficult to translate the concept into practice specifically in terms of operationalizing the relationship between development goals, economic growth and disaster impacts given their interactive relationships (UN-ESCAP, 2012).

The overall challenge rests on how to attain and materialize a complete paradigm shift towards DRR focused development approach and create a sustained system through necessary disaster policies, regulations and operating procedures at all levels of governance to ensure building resilience and improving people's lives. Country cases highlight that major risk governance issues include, among others, poor inter-agency coordination and cooperation, greater emphasis on emergency response compared to risk reduction measures and unclear, or at times, conflicting roles and responsibilities of stakeholders (Djalante,

2012; OCD, 2013; University of the Philippines, 2015). As articulated by all member states in the 2014 UN-ESCAP session, one of the major development challenges lies in translating the DRR commitments effectively through building resilience and improving lives and livelihoods of people in a sustainable manner (UN-ESCAP, 2014).

4. Crisis and Disaster Studies

This special issue consists of a total of 11 papers. The incidents described and their issues and complexities examined here attempt to accumulate knowledge on disaster-related economic behavior of households, firms and public and non-government sectors from various economic perspectives to enhance and extend the understanding of crises and disasters.

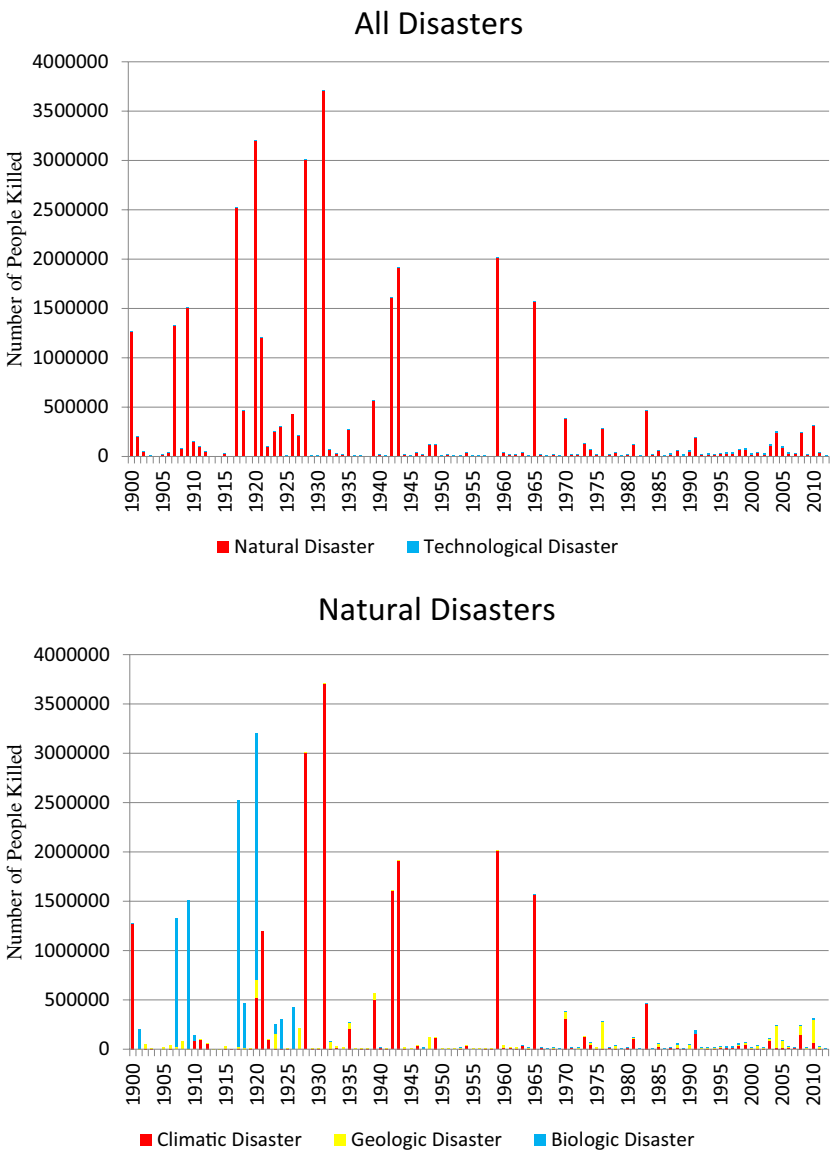
Karim and Noy provide a survey of the literature that examines the direct and indirect impacts of natural disaster events specifically on the poor and their impact on income distribution within affected communities and societies. Highlighting the existing issues and gaps in disaster literature, Karim and Noy argue that perhaps it is even more important to determine the long-term effects of catastrophic disasters on various income groups, rather than only their direct and indirect short-term impacts as despite the limited empirical evidence available, data suggest that large natural shocks can have important regional consequences that may persist for decades.

Private property is one of the clearest examples reflecting how disaster affected the region. Using local data in Australia, Athukorala, Martin, Neelawala, Rajapakse and Wilson find that soon after a natural disaster property prices in affected areas decrease even though the large majority of individual houses remain unaffected. They also show the largely unaffected suburb might gain immediately after a natural disaster but this gain may disappear if natural disasters continue to occur in the region due to the stigma created. Tanaka and Managi study the damage caused by the radioactive contamination of the Great East Japan Earthquake also using property level data. The results show land price decreased after the accident. Especially, commercial and business areas are more sensitive to this negative impact of commercial and business areas are more sensitive than residential areas to the radiation quantity.

Another dimension of detailed market data related to disaster is financial market data. Koerniadi, Krishnamurti and Tourani-Rad look at financial market data and the result suggests that while earthquakes, hurricanes and tornadoes could negatively affect market returns several weeks after the events, other disasters such as floods, tsunamis and volcanic eruptions have limited impact on stock markets.

Focusing on the role of food security in managing disaster risks, Arturo Ruiz, Ndoma and Park evaluate food sustainability of a country in the event of a natural disaster using a Minimum Food Security Quota (MFS-Quota). Applying, the MFS-Quota, designed to calculate the approximate amount of annual food storage that a country needs in order to subsist through a natural disaster, to analyze Malaysia's food storage and supply readiness in the face of a major natural disaster, they argue that MFS-Quota can be a valuable tool for policymakers in their quest for food security. While Banerjee argues that apart from

food security, social and economic conditions — education, occupation, and ownership of productive assets of household-members — at times, can also play significant role in consumption patterns of affected households. Presenting household-data from flood-devastated Bangladesh, he argues that in besides the environmental conditions, adverse social conditions can also be crucial determinants of food access during catastrophes and even though the risk-generating factors are often interrelated, their relative contributions

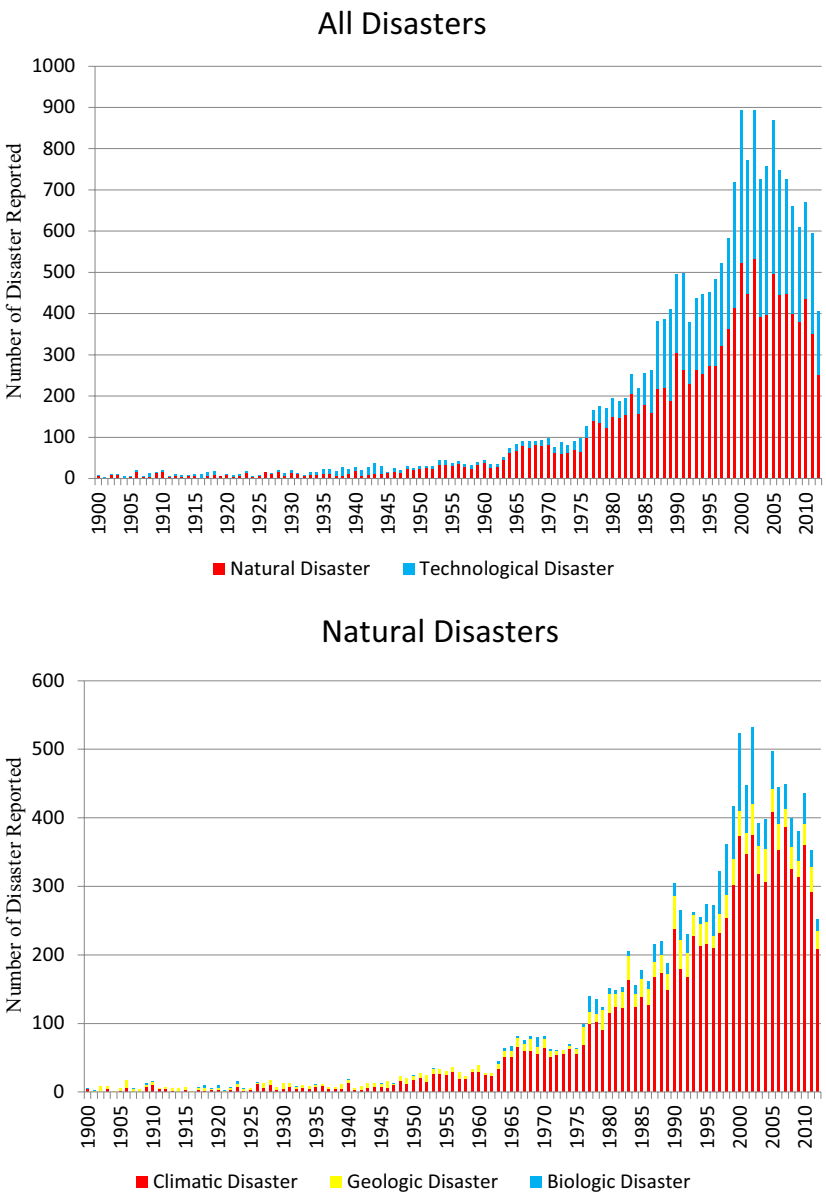


Source: Guha-Sapir *et al.* (2015)

Figure 1. Global Disaster Fatalities in the History

vary across households having varying locations of natural hazards and in consumption distribution.

Shahrier and Kotani study the collective disaster mitigation for coastal zone in Bangladesh as people's pro-social attitude toward such countermeasures are crucial in helping the region. They find that the poor and less educated people, who are more pro-social, are likely to choose willingness to donate labor and willing to donate more labor,



Source: Guha-Sapir *et al.* (2015)

Figure 2. Global Disaster Events in the History

while rich and educated people are likely to choose willingness to pay and willing to donate more money.

Disasters provide disruptive effects on various aspects of community on different scales and the relief efforts are important in understanding negative effects from the shock. Sanaei, Horie and Managi use data after the 2011 Great East Japan Earthquake and Tsunami and study the return decision to the original residence. They find that having related job to the original region and ownership status have the largest impact on the return decision.

Based on a case study of the 1995 Great Hanshin-Awaji earthquake or also called Kobe Earthquake in Japan, Okuyama presents an empirical investigation of long-run economic effects of the event. The findings suggest that from a long-term perspective, large scale disasters can cause significant deviations from pre-disaster growth path in the region affected while during the first few years, growth impacts could still be positive due to recovery and reconstruction. Using detailed manufacturing plant level data, Matsuki and Managi investigate the impact of the same earthquake in Japan. They find the production was influenced after the quake. However the quake did not influence the manufacturing industries uniformly.

Tan and Lai examine the economic repercussions and policy responses to extreme events for an island nation. Examining the topic not widely studied, they assess the impacts of a health disaster (Severe Acute Respiratory Syndrome, SARS) and an economic crisis (Global Financial Crisis, GFC) on the Singapore economy based on selected indicators of the financial market, macro economy, and property sector. They maintain that crises of different nature entail different policy responses to both SARS and GFC towards economic recovery.

As seen in this special issue, different approaches are applied in understanding the complexities involved in relation to crisis and disaster events. Data and policies related to climate or other sources are increasingly applied in recent times both in developed and developing countries (Managi, 2015). Further studies are needed to analyze in-depth policy relevant questions in these areas.

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SHUNSUKE MANAGI
Department of Urban and Environmental Engineering
School of Engineering, Kyushu University
Fukuoka, Japan

QUT Business School, Queensland University of Technology
Brisbane, Australia
managi.s@gmail.com

SUMAN K. SHARMA
Division of Economics
Nanyang Technological University, Singapore
SumanSharma@ntu.edu.sg

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